

Command and Control Software for Single-Operator Multiple UAS Missions, Phase I

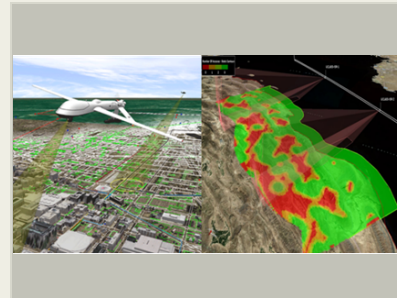
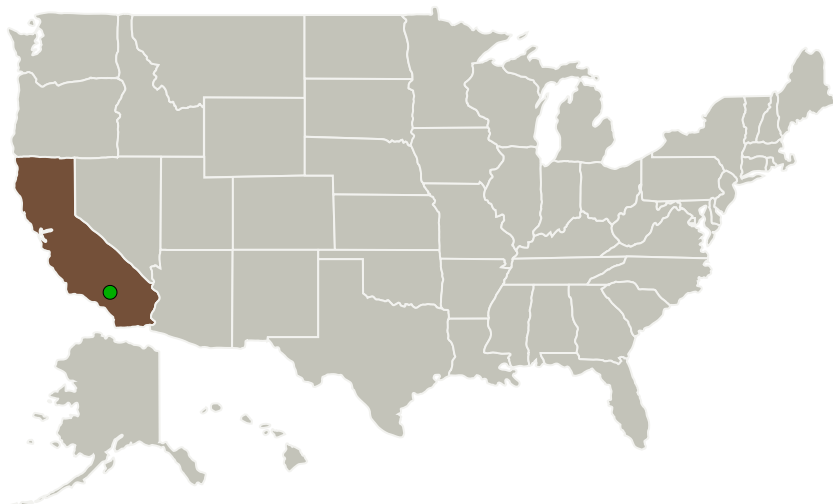
Completed Technology Project (2015 - 2015)



Project Introduction

Existing command and control (C2) paradigms for UAS platforms are extremely limited and cumbersome, requiring at least a single operator per UAS, if not more than one operator for each UAS (as is the case with many scientific and commercial UAS platforms). For example, UAS platforms such as the ScanEagle or the Sierra require at least one operator to handle the routing / navigation tasks for the aircraft and another operator to handle and operate the mission-specific payload. In this setting, the UAS platforms actually become a force-divider instead of a force-multiplier. The requirement of multiple operators for each individual UAS platforms is problematic for commercial applications where the high cost of human operators would inhibit many key applications such as package delivery from becoming financially viable. To address these issues, Opto-Knowledge Systems Inc (OKSI) and Analytical Graphics Inc (AGI) are joining forces to design, demonstrate, and deliver a robust multiple Unmanned Aerial System (UAS) semi-autonomous command and control tool that will enable a single human operator to manage multiple UAS platforms concurrently. Though there has been significant research into the single-operator multiple UAS control paradigm, there are currently no existing commercially available tools for this application. This work is aimed at shoring up this gap by creating the Single-Operator Multiple Autonomous Vehicle (SOMAV) command and control tool that will be integrated with AGI's Systems Tool Kit (STK) software and sold commercially at the end of the Phase-II program.

Primary U.S. Work Locations and Key Partners



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Organizations Performing Work	Role	Type	Location
Opto-Knowledge Systems, Inc.(OKSI)	Lead Organization	Industry	Torrance, California
● Armstrong Flight Research Center(AFRC)	Supporting Organization	NASA Center	Edwards, California

Primary U.S. Work Locations

California

Project Transitions

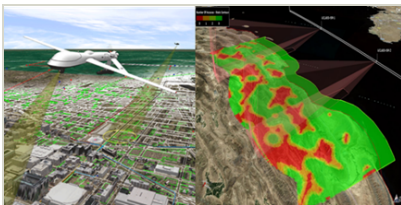
**June 2015:** Project Start**December 2015:** Closed out

Closeout Summary: Command and Control Software for Single-Operator Multiple UAS Missions, Phase I Project Image

Closeout Documentation:

- Final Summary Chart Image(<https://techport.nasa.gov/file/138749>)

Images



Briefing Chart Image

Command and Control Software for Single-Operator Multiple UAS Missions, Phase I

(<https://techport.nasa.gov/image/135089>)

Organizational Responsibility

Responsible Mission Directorate:

Space Technology Mission Directorate (STMD)

Lead Organization:

Opto-Knowledge Systems, Inc. (OKSI)

Responsible Program:

Small Business Innovation Research/Small Business Tech Transfer

Project Management

Program Director:

Jason L Kessler

Program Manager:

Carlos Torrez

Principal Investigator:

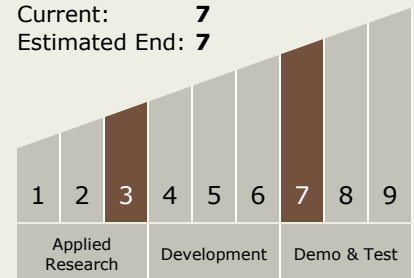
Chris Holmesparker

Technology Maturity (TRL)

Start: **3**

Current: **7**

Estimated End: **7**



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Technology Areas

Primary:

- TX11 Software, Modeling, Simulation, and Information Processing
 - └ TX11.1 Software Development, Engineering, and Integrity
 - └ TX11.1.5 Architecture and Design of Software systems

Target Destinations

The Sun, Earth, The Moon, Mars, Others Inside the Solar System, Outside the Solar System